

File PE
OX

17 March 1964

Dear Jack,

Enclosed are figures referenced in our message 1698
covering monthly report #8 on Contract LW-627 Task 411.

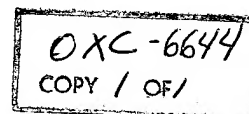
Best regards

Dick/mB

Dick

mb

February 18, 1964



STATINTL

TO: FROM: 

SUBJECT: Interim Progress Report - Selectively Evaporated Coatings

Previous progress reports pointed out inconsistencies in the results obtained from our selectively evaporated coating process. Most distressing of these inconsistencies was the sine wave surface pattern which was often observed in the fringes.

Steps taken to isolate the causes of these surface abnormalities revealed the major problem to be one of nonuniform mask travel length. This was corrected by revising the mechanical components of the mask motion fixture and by motor driving the mask. A flat (3535 #21) was coated experimentally in order to evaluate the results of the revisions in equipment.

The pattern of the mask which was used is shown in Figure 1. This is an experimental mask which is designed to provide two areas of variable transmission, one with max. transmission in the center and one with max. transmission at the edges. Also available are zero and 100% transmission reference patches, single variable width lines, size graded transmissive squares and repetition rate graded lines. Several fringe photos of this flat clearly reveal the various mask areas. (Figures 2, 3, 4, 5). A comparison with an earlier evaporation on the same flat (Figure 6) shows the sine wave has been eliminated in all areas where the mask motion was an integral number of mask lines.

The fringes in a variable density area (Figure 7) were evaluated so that locally corrected coating densities were obtained and these are compared to the predicted coating densities calculated from measurements on the mask (Figure 8). The areas which corresponded to 100% transmission areas were found to be coated to a thickness of $.43\lambda$ as compared to the $.5\lambda$ desired. Total thickness evaporated is adjusted by changing the evaporation boat loads. A 14% increase in load is indicated in these data. The actual deposit has been normalized to eliminate this constant from the graphical data presented. The graph shows that the actual density is very close to the predicted value, usually within $1/30\lambda$ and never exceeding $1/14\lambda$ even though the data was reduced directly from the 4 x 5 polaroid print.

These data indicate that a new attempt to correct out of spec. flats should be initiated.

ELB:lc
Attachments



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